

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A ball grid array substrate for semiconductor devices ~~which comprises,~~ comprising:
 - a) a dielectric substrate having a first and second major surface with one or more ~~apertures~~ vias through said substrate,
 - b) metallization patterned on the first surface of said substrate contacting each of said vias, and including one or more bonding pads for providing interconnection to said semiconductor device,
 - c) a core of solderable metal within each of said ~~apertures~~ vias intimately connected to said patterned metallization, and extending through a minimum of one-third the substrate thickness, and
 - d) a solder ball extending into said via from the second surface, making intimate contact with said solderable metal.
2. (original) A substrate as in claim 1 wherein said core of solderable metal comprises electroplated copper.
3. (original) A substrate as in claim 1 wherein said core of solderable metal has a planar surface.
4. (original) A substrate as in claim 1 wherein said core of solderable metal includes thin layers of nickel and gold on the surface contacting said solder ball.
5. (original) A substrate as in claim 1 wherein said dielectric material comprises a flexible film.
6. (original) A substrate as in claim 1 wherein said dielectric material comprises a polyimide polymer.

7. (original) A substrate as in claim 1 wherein said dielectric material comprises a composite polymer.
8. (original) A substrate as in claim 1 wherein said dielectric material is in the range of 50 to 175 microns thickness.
9. (original) A substrate as in claim 1 wherein said patterned metallization comprises copper.
10. (original) A substrate as in claim 1 wherein said solder balls comprise eutectic tin /lead solder.
11. (original) A substrate as in claim 1 wherein said solder balls comprise a lead free solder.
12. (original) A substrate as in claim 1 wherein said vias are in the range of 100 to 300 microns in diameter.
13. (original) A substrate as in claim 1 wherein the height to width ratio of said vias is a maximum of 0.3 to 1.0.
14. (original) A via structure for attachment of a solder ball including;
 - a) dielectric base having one or more apertures,
 - b) a solid core of solderable metal extending from one surface to a minimum of one third the thickness of said base, and
 - c) a height to width aspect ratio of 0.3 to 1.0 or less.
15. (original) A via structure as in claim 1 wherein said solderable metal core is in intimate contact with a patterned metallization on at least one surface of said base.
16. (original) A via structure as in claim 1 wherein said solderable metal core comprises a plated conductor.

17. (new) A manufacture comprising:
- a) a dielectric substrate having a first surface, a second surface, and one or more vias between the surfaces,
 - b) a metal pattern on the first surface contacting the vias, and including one or more bonding pads,
 - c) a solderable metal member within the vias connecting the metal pattern, and
 - d) a solder ball extending into a via from the second surface, contacting the solderable metal member.